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ABSTRACT

In 1993, about 93 percent of respondents previously surveyed in 1992 were reinterviewed as part of a study of the impact of labor market programs in postsocialist Hungary. The surveys investigated the impact of retraining and public service employment (PSE) on labor market success by comparing outcomes for participants to others who were registered as unemployed but did not participate in retraining or PSE. The sample included 604 people who were registered unemployed, 445 retraining participants, and 429 PSE participants. People who had completed retraining were 19.2 percent more likely to be reemployed in a normal job and to have monthly earnings about 1,500 Hungarian florints (HUF) higher. To correct for the sample selection that resulted in the training participants being younger, more female, more educated, and more specialized than persons in the comparison group, these estimation methods were attempted: matched pairs and regression adjustment. The results indicated that participants were only mildly more successful in gaining reemployment. Participants in PSE were 16.4 percent less likely to be reemployed in a normal job and to have monthly earnings that were about HUF2,2000 lower than persons in the comparison group. The estimation methods indicated that PSE participants were mildly more successful in gaining regular employment. In general, retraining slightly helped improve the chances for reemployment and PSE was a successful strategy to keep people out of unemployment. (Includes 18 data tables.) (YLB)

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An Impact Analysis of Employment Programs in Hungary

Upjohn Institute Staff Working Paper 95-30

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An Impact Analysis of Employment Programs in Hungary

Christopher J. O'Leary

Abstract

This paper presents estimates of the impact of retraining and public service employment (PSE) on reemployment and earnings in the Republic of Hungary during the early phase of post-Socialist economic restructuring. Since assignment to programs resulted in groups with vastly dissimilar characteristics, impact estimates were computed using a variety of methods. Controlling for observable characteristics, retraining may have slightly improved the chances for reemployment in a non-subsidized job, but the gain in reemployment was probably not sufficient to justify the cost of retraining. However, since the durability of jobs appears to be better for those who were retrained, the long term earnings impacts may be significant. Net societal benefits from retraining could be improved by targeting services to more males, older persons, those with fewer years of formal education, and those with no non-manual specialization. PSE was a successful strategy to keep people out of unemployment, but it did not appear to be a cost effective means of getting people reemployed in non-subsidized jobs. PSE is probably best viewed as an income transfer program that has the side effect of preventing deterioration of basic work habits. In terms of reemployment, the net societal impact of PSE could be improved if it involved more older persons and females.

An Impact Analysis of Employment Programs in Hungary

1. INTRODUCTION

This paper presents estimates of the impact of retraining and public service employment (PSE) on the labor market success of persons who participated in these programs in the Republic of Hungary during the early phase of post-Socialist economic restructuring. The estimates are based on a survey organized by the International Labor Office (ILO) group in the Hungarian Ministry of Labor which operates on a grant from the government of Japan. Involved in the survey were representatives of the Hungarian Ministry of Labor, the National Labor Center (OMK) in Hungary, the ILO, the W.E. Upjohn Institute for Employment Research, and the labor administrations in the Hungarian counties of Borsod-Abauj-Zemplen, Hajdu-Bihar, and Somogy.

Design of the sample on which the survey was conducted began in July 1992. A previous survey using the sample design was conducted in November 1992, results of that survey are summarized in Godfrey, Lazar and O'Leary (1993). That paper reported a fundamental problem in evaluating the effect of the active programs on reemployment--many of those interviewed were still involved in retraining or PSE. This paper reports on results of the second attempt to interview the sample. The second wave of interviews was carried out in November, 1993, exactly one year after the first interviews.

Estimates of program impact given in this paper were computed using a variety of methods, because the sample selection involved in assignment to programs resulted in groups with vastly dissimilar characteristics. A subgroup analysis of treatment impacts is also presented, with special summaries for the three separate counties included.

2. SAMPLE DESIGN

Rather than emphasizing statistical precision and power, the sample sizes for the ILO survey of labor market program participants in Hungary were largely determined by the budget available and the time burden conducting the surveys would impose on the county labor office staffs. Subject to these constraints the samples were made as large as possible. Other basic objectives were to have the sample sizes across counties be in proportion to the population and number of unemployed in the counties, and to have a subsample which would act as a comparison group for estimating program impacts which was somewhat larger so as to maximize the statistical leverage in estimating impacts.

3. SELECTING THE SAMPLE

Just as the original survey conducted in 1992 had survey response rates over ninety percent in each of the three counties, in November 1993 over ninety percent of the previous respondents were contacted in each county. A review of the methods used to contact randomly selected clients, and the rules for suspending interviews is given for each of the three counties in Godfrey, Lazar, and O'Leary (1993). A statement describing the success achieved in obtaining a random sample for the survey is described in O'Leary (1993).

Interviews for the survey were conducted in the three Hungarian counties of Borsod (Borsod-Abauj-Zemplen), Hajdu (Hajdu-Bihar), and Somogy. In these counties three categories of persons who used labor market programs were surveyed: (1) persons who registered as unemployed in June of 1991, (2) persons who entered retraining in the second half of 1991, and (3) persons who participated in public service employment (PSE) in September 1991.

As summarized in Table 1, a total of 1,478 persons were interviewed for the survey in November of 1993. This total is somewhat smaller than the 1,574 interviewed in November 1992, but the sample proportions across programs and counties did not differ significantly between years nor from the sample design.

4. PRELIMINARY COMPARISON OF THE SAMPLES

Comparing the exogenous characteristics of the three samples we see that those who entered retraining and those who participated in PSE are quite different from those in our sample of registered unemployed. As shown in Table 2, excluding county of residence, there are statistically significant differences in nine of the ten exogenous characteristics when either the retraining or PSE sample is compared to the sample of registered unemployed. Compared to the sample of registered unemployed those in the retraining sample are significantly younger, more likely to be female, more educated, more specialized in professional and technical skills, much more likely to have worked in white collar jobs, less likely to have received unemployment insurance (UI) benefits since June 1991, less likely to have special problems in finding a job, and less likely to be unskilled.

The contrast between the PSE sample and the sample of registered unemployed is just as great, but the differences are generally in the opposite direction. Relative to the registered unemployed, PSE workers tend to be somewhat younger, more likely to be male, less educated, less specialized in either manual or technical skills, much less likely to have worked in white collar jobs, much less likely to have received UI since June 1991, more likely to have special problems in finding a job, and much more likely to be unskilled. Clearly, there are different selection criteria applied in referring registered unemployed to retraining and PSE. This selection bias should not be ignored in evaluating the impact of the programs. First, however, some more

fundamental adjustment should be made before examining program impacts on reemployment and earnings.

In addition to comparing the samples in terms of exogenous variables, Table 2 also summarizes results on outcomes of interest. Compared to the 1992 survey, for each of the three samples there was an increase in the percent of respondents in a "normal job"[1], the most dramatic increase was for persons in the retraining sample who increased their rate in a normal job by nearly 20 percentage points to 50.6 percent. Furthermore, while the percent in a normal job for training participants was not different from the registered unemployed in 1992, the retraining participants had a statistically significant 19.2 percentage point higher reemployment rate in 1993 than the registered unemployed sample. For the PSE sample we see in the 1993 survey that while the percent in a normal job remains well below that for the comparison sample, between years there was a significant increase in the percent in a normal job.

Average monthly earnings on the normal job increased by about 18 percent for both the retraining and comparison samples of registered unemployed, with the monthly earnings for training participants being significantly higher than the comparison group of registered unemployed in 1993. Earnings for former PSE workers now in a normal job rose from a much lower base about 20 percent, but were significantly lower than the comparison group in November 1993.

A broader measure of work is also reported on in Table 2. The percent in any job in November 1993 was 31.4, 56.0, and 39.2 for the registered unemployed, retraining, and PSE samples respectively. This employment indicator may better summarize true hardship because it includes persons in supported work who are receiving incomes. It is reported here because it is more directly related to the official measure of unemployment. However, since the ultimate aim of active measures is to get people into normal jobs, that measure will be the main focus of this paper.

5. IDENTIFYING THE SAMPLES FOR ANALYSIS

Table 3 summarizes restrictions placed on the samples before impact analysis was conducted. Among the 604 in the sample of registered unemployed interviewed in November of 1993, 15 had participated in either retraining or PSE before November of 1992. Since we are interested in comparing samples of participants in retraining or PSE with a sample of non-participants, for analysis, the group of 15 is removed from the sample of registered unemployed.

Since we are interested in determining the effect of retraining on labor market success, it is important that we restrict our sample of retrainees to those who have left retraining. In

[1] "Normal job" means a job which is not subsidized in any way with money from the government's Employment Fund. In this paper we also examine the percentage "in any job," which is a broader outcome measure.

analyzing the November 1992 survey this condition meant eliminating 106 of the 474 respondents. However, by November 1993 all 445 of the November 1993 respondents had completed the training which they entered in the second half of 1991.

In the earlier survey it was impossible to determine the proportion of PSE participants who had finished their involvement with the program. However, application of this distinction was possible in the November, 1993 survey. Among the 429 PSE respondents 393 had completed their involvement with the program which began in 1991. In determining the proportion in a "normal job," this is the relevant sample to examine.

Table 3 also provides a further summary of the activities of persons not in normal jobs on the survey date. For each sample the table lists the number of people registered as unemployed, the number receiving unemployment compensation, and the numbers involved in various active labor market programs.

Among those not in any job on the survey date, the vast majority appear to view the public employment service as a useful aid in gaining reemployment. For this group 63% of registered unemployed, 53% of retraining participants, and 78% of persons with PSE experience were registered. Given the small numbers receiving unemployment compensation, it would also seem that only a small fraction registered simply to meet continuing eligibility for benefits.[2] Table 3 also shows that a good number of persons not in normal jobs were involved with active labor market programs. For the comparison sample of registered unemployed the most popular activity was early retirement, among the retraining participants the most popular was additional retraining closely followed by PSE, and for the PSE sample the most popular activity was further involvement in PSE.

While not reported in Table 3 it is also interesting to note that among those not in a normal job in November 1993, a significant proportion have held a normal job at some time since November 1992. The numbers are 39 or 9.7% of the 404 registered unemployed, 35 or 15.9% of the 220 retraining completers, and 47 or 14.1% of the 334 PSE workers who were not in a normal job in November 1993 had one at some time since November 1992.

Table 4 summarizes characteristics of the three samples that will be used for analysis. It should be noted that the comparison group of 589 registered unemployed who did not use an ALP had no statistically significant differences in exogenous characteristics from the full sample of 604.

As summarized in Table 4, comparing the new retraining sample and PSE samples to the new comparison group sample of registered unemployed persons who did not participate in an ALP, we see the same pattern of results as is presented in Table 2 for the full subsamples--the

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[2]Given the time periods involved, the majority of these people are probably receiving the quasi-welfare benefit known as Unemployment Assistance rather than regular Unemployment Compensation.

retraining sample is more female, better educated, and more skilled than the comparison group, while the PSE sample is more male, less well educated, and less skilled than the comparison group. To summarize the samples for analysis include 589 persons who registered as unemployed but did not participate in an ALP, 445 persons who completed a retraining course by November 1993, and 393 persons who finished participation in PSE.

The two indicators of labor market success used in conducting the impact analysis are: (1) now employed in a normal job, and (2) monthly earnings on the normal job. The first outcome is the best available measure of labor market success for making comparisons between the groups. It is an indicator of whether or not the person was employed on the survey date in November 1993.

For comparisons of this type there are problems with any measure of reemployment because participants in retraining and PSE have less time available for job search and less public and private resources devoted to job search since the time of registering as unemployed than persons who are registered as unemployed and not involved in an ALP. However, with the present sample this is less of a problem than for the November, 1992 survey because of the longer time available for search. Furthermore, at this later date employment status may depend more on the quality of the job match than the time available for search since at this time the current job might no longer be the first post unemployment job. Regarding the second measure of labor market success, monthly earnings, fortunately all persons employed in a normal job on the interview date reported average monthly earnings on their job.

Again, the most important result is that the final samples for analysis include 589 registered unemployed, 445 retraining completers, and 393 persons who had worked in PSE.

6. IMPACT ESTIMATION METHODOLOGY

Special care must be taken in evaluating the impacts of retraining and PSE on labor market success, because of the obvious sample selection involved in assigning registered unemployed to these programs. In what follows we present impact estimates computed in four separate ways: (1) simple unadjusted comparison of means, (2) comparison of means using a matched pairs comparison group, (3) regression adjusted impact estimates, and (4) impact estimates corrected for selection bias using the Heckman (1975) procedure. The following is a brief description of each of the four procedures used to estimate program impacts.

6.1 Unadjusted Impact Estimates

In terms of clearly guiding policy, simple unadjusted impact estimates are usually the most influential because they are easy to understand. This is the main appeal of program evaluation done using a classically designed experiment involving random assignment.[3] When random assignment has been achieved, modelling of behavior and complex econometric methods are not needed to estimate reliable program impacts. With large samples randomly assigned to treatment and control groups, observable and unobservable characteristics of the two groups should not differ on average so that any difference in outcomes may be attributed to exposure to the program. Program impacts may be computed as the simple difference between means of the samples of program participants and control group members on outcome measures of interest, or:

$$(1) \qquad E(y_i) - E(y_j),$$

where E is the expectation operator yielding means of the random variables, y is an outcome of interest, and the index i denotes the sample of program participants while j denotes the comparison sample. Tests of significance are done using t-statistics.

In the following two sections where we separately discuss impact estimates for retraining and PSE the first subsection presents the simple unadjusted program impact estimates. While random sampling may have been achieved within each of the three groups--registered unemployed, retraining, and PSE--as Table 4 highlights even the observable characteristics of the three samples are completely different. For this reason we also examine program impacts using three other methods which attempt to correct for differences in characteristics.

6.2 Impact Estimates Using a Matched Pairs Comparison Group

In terms of observable characteristics, the comparison group of 589 persons who registered as unemployed but did not participate in an ALP differed significantly from both the 445 persons who completed a retraining course by November 1993, and the 393 persons who have finished participation in PSE. Therefore, it would not be surprising to observe different labor market success across the three groups even in the absence of ALPs. To put the assessment of retraining and PSE on a more even footing, separate synthetic comparison groups for the samples of retraining and PSE participants were formed using a matched pairs methodology.[4]

The synthetic comparison groups used in the analysis reported on here were formed by comparing observations in the comparison group of 589 with those in the completed retraining and PSE samples using the standardized Mahalanobis distance measure:

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[3]For a good example of a labor market program evaluated using a classically designed field experiment see Spiegelman, O'Leary, and Kline (1992).

[4]See Fraker and Maynard (1987) for an interesting review and application of comparison group designs for evaluating employment-related programs.

(2) $d_{ij} = Sum_k(Z_{ik} - Z_{jk})^2$

where, the index i represents observations in either the retraining or PSE samples and the index j represents observations in the comparison group of 589, the index k runs over the 13 exogenous characteristics on which the observations are matched, and Z represents the standardized value of a characteristic where the mean and standard deviation of the characteristic is computed on the pooled sample of the 589 comparison group members and the members of the relevant ALP.

Using this distance measure, separate comparison groups were formed for the retraining and PSE groups. For example, for each of the 445 persons in the retraining sample d_{ij} was computed for each of the 589 people in the comparison group. The person with the smallest d_{ij} from the comparison group was selected for inclusion in the new synthetic comparison group, with ties being resolved randomly and each person in the retraining sample being compared to all 589 in the comparison group.[5] The same procedure was used to form a synthetic comparison group for the PSE sample.

After forming the new synthetic comparison groups of 445 for the retraining completers and 393 for the PSE sample, program impact estimates were computed using a simple difference of means, with significance of impacts being judged by t-tests. It should be noted that because a single observation from the comparison sample may be chosen more than once for the synthetic comparison group the estimated standard error, computed in the usual way, for this group will be will be reduced. The t-tests for the matched pairs analysis therefore depend on weighted standard error estimates which give the upper bound on the possible standard error.[6]

6.3 Regression Adjusted Impact Estimates

A natural method for assessing the impact of participation in a particular program on labor market success when observable characteristics of participant and comparison group members are dramatically different is multivariate regression analysis.

For this study both logit and ordinary least squares (OLS) estimation of the following model:

(3) $y_i = a_0 + a_1P_i + b_1X_{1i} + b_2X_{2i} + \ldots + b_{10}X_{10i} + u_i,$

was done on the pooled sample of comparison group members and program participants, where y is the outcome of interest, a_0 is the mean value of the outcome for comparison group members

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[5]That is, sampling was done with replacement. In neither the retraining nor PSE synthetic comparison group samples, did one observation from the full comparison group of 571 appear more than ten times.

[6]Weights in computing the standard error are one over the number of times an observation appears in the sample. This is equivalent to computing the standard error on a sample where each observation drawn appears only once. Using this upper bound on the standard error, we apply the weakest possible t-tests.

evaluated at the mean of all observable characteristics included in the regression, P is a dummy variable with a value of 1 for program participation (either retraining or PSE) and 0 otherwise, a_1 is the impact of the program on the outcome for the program participants evaluated at the mean of all observable characteristics, X_1 to X_{10} are observable characteristics measured as deviations from their mean values, and u_i is a normally distributed mean zero error term.[7]

This method of computing program impact estimates is appropriate when differences in participant and comparison samples can be explained by observable characteristics. We computed parameter estimates using both OLS and logit methods because of the possibility that OLS estimates would be biased since the range of variation in the dependent variable is constrained to the zero-one interval. Maddala (1982, Chapter 1) suggests using the logit estimator in such cases. Bias is usually most severe when the bulk of probability clusters at one or other extreme of the zero-one interval.

6.4 Selection Bias Corrected Impact Estimates

When selection into programs is not random, and participation in a program is due to both observable and unobservable characteristics, program impacts cannot be properly estimated in a regression model of the type specified in equation (3). Heckman (1975) showed that because of the way in which sample selection affects the error term, u, sample selection will bias parameter estimates computed by OLS in an equation like (3) just as if an important variable had been omitted from the specification of the estimating equation. He also recommended a way to create this omitted variable which should be included in the specification to be estimated by OLS on the selected sample, e.g. program non-participants are excluded during estimation. The procedure can be summarized by the following two equations:

$$(4a) \quad y_{1i} = F(X_{1i}, \ldots, X_{10i}, u_{1i}),$$

$$(4b) \quad y_{2i} = b_0 + b_1X_{1i} + b_2X_{2i} + \ldots + b_6X_{6i} + c_0S_i + u_{2i},$$

where (4a) which predicts program participation, y_1, is estimated by Probit with ten explanatory variables including many interactions and squared values of variables included as predictors.[8]

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[7]In this application the regression model is a statement of an analysis of covariance methodology, where X_1 to X_{10} are the covariates (see Chapter 22 in Netter and Wasserman, 1974, for a good discussion of this methodology). For this study only eight covariates were used in the analysis of covariance because missing values on two of the potential covariates (white collar worker and unskilled worker) would have dramatically reduced the sample sizes for the regressions.

[8]Specification of the probit equation was based on results from prior estimation of OLS participant equations for each separate county. The retraining probit specification included the following variables: age, age squared, manual specialization, technical specialization, Borsod county dummy multiplied by manual specialization, Borsod county dummy multiplied by the dummy variable received a UI payment since June of 1991, Somogy county dummy multiplied by manual specialization, Hajdu county dummy multiplied by age, and Hajdu county dummy multiplied by age squared. The PSE probit specification included the following variables: age, age squared, male, manual

With the parameter estimates resulting from Probit estimation of (4a) a new variable, S, which is a measure of the probability of sample selection is created.[9] This new variable is then included in an equation like (3) to yield equation (4b) thereby solving the sample selection--or omitted variable--problem. Equation (4b) which predicts "in a normal job," y_2, is then estimated by OLS on the sample of program participants.[10]

To estimate the predicted value of y_2 for program participants we evaluate the OLS estimate of (4b) at the mean values of the variables for the sample of participants. A similar exercise is carried out for program non-participants, i.e. (4b) is estimated by OLS on the sample of program non-participants.

The reason for estimating impacts using the Heckman sample selection procedure is the concern that there is something unobservable about program non-participants who have observable characteristics similar to program participants, which would cause them to have different labor market success than program participants even if they had participated in the same program. In principle, the Heckman procedure should correct for these unobservable differences. Denoting X_1 to X_6 simply as **X** and b_1 to b_6 as **B**, following Maddala (1983, p. 262) we may decompose the causes of the program impact into observable and unobservable factors:

$$(4c) \quad E(y_{2i}|y_{1i}=1) - E(y_{2i}|y_{1i}=0) = \mathbf{X}_i(\mathbf{B}_p - \mathbf{B}_n) - (\mathbf{c}_p - \mathbf{c}_n)\mathbf{S}$$

where, $\mathbf{B}_p$ and $\mathbf{B}_n$ are parameter estimates from regressions on participants and non-participants respectively, $\mathbf{c}_p$ and $\mathbf{c}_n$ are parameter estimates on the selection bias correction term from regressions on participants and non-participants respectively, and **S** is the selection bias correction term; after estimation these computations are done on only the sample of program participants. The left hand side of (4c) states that we are computing the difference between the

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specialization, received a UI payment since June 1991, no previous work experience, Borsod county dummy multiplied by no previous work experience, Somogy county dummy multiplied no previous work experience, Hajdu county dummy multiplied by age squared, Hajdu county dummy multiplied by male, Somogy county dummy multiplied by male, and Somogy county dummy multiplied by received UI since June 1991.

[9]This variable is formally called the inverse Mill's ratio.

[10]For identification of the two equation system, (4a) and (4b), it is important that at least one variable which appears in (4a) be excluded from (4b), and vice versa. In our case this means that there should be at least one variable which explains program participation but not the probability of reemployment, and vice versa. In addition to the Mill's ratio variable for retraining our specification of (4b) includes age, education, male, manual specialization, Hajdu county, and Somogy county; for PSE the added variables are age, male, education, received a UI payment since June 1991, Hajdu county, and Somogy county. As is usually done, in the present application identification is mainly achieved through the non-linearities of the interaction and squared terms. In essence these variables are assumed to capture unobservable factors explaining participation. In our application y_2 is a binary indicator of reemployment. Since the outcome is binary it may be appropriate to estimate (4a) and (4b) as a bivariate Probit. However, we have chosen to treat (4b) as a linear probability model and use the robust OLS method. Our experience with the logit estimation of regression adjusted employment probabilities suggests this is a reasonable approach.

outcome for program participants and the outcome for program participants had they not participated in the program. The first term on the right hand side of (4c) is the effect of the program controlling for observable characteristics while the second term on the right is the impact due to selection bias.

In this paper the selection bias correction method is applied only to examine the impact of retraining and PSE on the proportion of persons in a normal job at the time of the survey. Since positive earnings are only observed for those who work the sample sizes are too small to practically apply selection bias correction bias methods to the level of earnings.

7. REEMPLOYMENT SUCCESS OF PARTICIPANTS IN RETRAINING

The following comparisons involve persons who participated in retraining programs in the second half of 1991 and had completed the retraining course by the survey date in November of 1993, with the comparison group being persons who were registered as unemployed in June of 1991 and did not participate in retraining or PSE during that spell of unemployment.

The following description of the usual process of selecting candidates for participation in retraining was provided by a county labor programs administrator--Dr. Janos Simko of Borsod-Abauj-Zemplen county where the first regional retraining center (ERAK) has been established:

> Unemployed persons interested in retraining are usually first informed about the availability of courses at the local employment center, although announcements are frequently also made in local newspapers. Anyone who is unemployed can apply for retraining. Counsellors at local employment centers try to guide applicants into the most appropriate type of training. According to the law, the unemployed may be obliged to enter retraining, but this is not generally applied in practice. Applicants undergo an aptitude test and a health examination which is either carried out by a physician and psychologist of the county labor center, or in certain cases--such as at the regional retraining centers--at the retraining institution. With courses where there are too many applicants, there is a kind of ranking based on the psychology test results. The quality of these tests vary, some of them are very superficial. Recently an attempt was made to encourage training institutions to use specialists to do deeper examinations to reduce dropouts among retraining participants. In this field we are extremely happy about the methods used by the regional retraining center. After selecting the actual participants, we stop their unemployment compensation, because they receive a retraining subsidy during the course.

This statement of the selection process for retraining conforms with the characteristics of the samples observed. A clear form of sample selection is the case where a course is over subscribed and applicants are referred based on their rank in performance on psychological and physical

examinations. Scores for these tests would be a useful characteristic in modelling sample selection. Unfortunately these results are not available. Clearly those individuals with a comparative advantage with training were selected for training; they should be expected to benefit from training more than would a randomly selected sample.

7.1 Unadjusted Impact Estimates for Retraining

From Table 4 we see that on the survey date the percentage of people reemployed in a normal job was 19.2 points higher for retraining completers as compared to registered unemployed who never participated in an ALP. Furthermore, the difference is significant at the 95 percent confidence level.

Persons who completed retraining and were employed in normal jobs also appear to have monthly earnings which are about HUF 1,500 higher than persons in the comparison group, but this difference is not statistically significant.

From November 1992 to November 1993 the percentage of persons holding a normal job increased by 4.2 percentage points among those in the comparison group but increased by 19.8 percentage points among those who completed retraining thereby magnifying the difference in success between groups.

An outcome which was not reported in summaries of the earlier survey the "percent in any job in November 1993," shows that training completers had better success than the comparison group even by this broader measure of labor market success. In any job also includes participation in public works or any other type of subsidized job. Fully 56 percent of retraining completers were employed in any job in November 1993 while only 35.5 percent of persons in the comparison held any employment position.

7.2 Impact Estimates Using a Matched Pairs Comparison Group for Retraining

In an attempt to correct for the sample selection which resulted in the group of training participants being younger, more female, more educated, and more specialized than persons in the comparison group, the matched pairs method was used to form a synthetic comparison group with similar characteristics. Examining means on the thirteen exogenous characteristics in Table 5 we see that the synthetic comparison group looks much like the group of retraining participants in terms of observable characteristics. It is also the case that the reemployment rates are not statistically significantly different between the two groups. While not significant, the point estimate for those who did not participate in retraining shows a 1.2 percent lower reemployment rate. This suggests that most of the added reemployment success of those participating retraining is due to the observable characteristics of those selected for retraining.

Average monthly earnings on the current normal job for the synthetic comparison group were somewhat lower--by HUF 2,052--than for the group of retraining completers. Again, this

is probably due to the fact that those selected for retraining tend to be those registered unemployed with the highest potential productivity.

7.3 Regression Adjusted Impact Estimates for Retraining

Regression adjusted impact estimates are presented in Tables 7 and 7a, with logit estimates given in the former and ordinary least squares (OLS) estimates in the latter. Since reemployment probabilities for the training and comparison groups ranged from about 35 to 56 percent, the limited range of the dependent variable did not cause severe bias in estimating parameters by OLS, indeed the OLS and logit estimates were nearly identical.

Both sets of results indicate that on the survey date people who completed retraining were about 6.4 percent more likely to be reemployed in a normal job than were persons who were registered as unemployed and never participated in an ALP. This difference is significant at the 90 percent confidence level. To produce these estimates, regressions were run on the pooled sample of 445 retraining completers and 589 comparison group members who registered as unemployed in June 1991 and had not participated in an ALP by November 1992.[11] The point estimates should therefore be interpreted as the mean response for the retraining and comparison groups evaluated at the mean characteristics of the combined sample. That is, if the retrainees had the mean characteristics of the combined sample they would be about 6.4 percent more likely to have a normal job at the survey date than the average person in the combined sample.

From this analysis persons who completed retraining also appear to have monthly earnings which are about HUF 500 higher than persons in the comparison group, but this difference is not statistically significant.

7.4 Selection Bias Corrected Impact Estimates for Retraining

Selection bias corrected impact estimates presented in Table 9 indicate that on the survey date people who completed retraining were 32 percent more likely to be reemployed in a normal job than if they had never participated in retraining. This difference is a much larger estimate of the impact of retraining than any of the previous methods, and in pure statistical terms it is significant at the 95 percent confidence level. However, this estimate is unreliable in a different sense--it is extremely sensitive to the empirical specification. To explain this we review the methodology and examine a useful decomposition of the impact estimate.

Under the Retraining heading Table 9 presents five estimates including two estimates of the effect of selection bias. These estimates were computed using results from estimating three separate equations. First a probit equation predicting the probability of reemployment was run with the results used to create a selection bias correction variable. The correction variable was

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[11] A slightly smaller sample resulted because of missing values for some of the independent variables. The earnings equation was estimated only on those who were employed in a normal job on the survey date.

then used in estimating two separate ordinary least squares equations predicting the probability of reemployment in a normal job--one on the sample of retraining participants, the other on the comparison group.

Evaluating the equation run on retraining participants we predict a 50.7% reemployment rate, next evaluating the equation estimated on the comparison sample using data on the participants we estimate the percent of participants in a normal job had they not participated to be 18.7%. This surprisingly large difference is due to the fact that the parameter on the selection bias term in the non-participant equation is large, significant and negative at -18.1. When this factor is multiplied by the selection probability variable for the participants, all of whom have a high probability of selection since they did participate, there is a dramatic reduction in the predicted rate of reemployment. This process results in an estimated impact of the program of 32 percentage points. Using the decomposition in the methodology section given above we estimate that 23.5 percentage points of the impact are due to observable characteristics while 8.9 percent is due to selection bias.

In this exercise the probit selection rule was specified using results of auxiliary regressions. The exact specification is listed in footnote eight. The value of the coefficient on the selection bias term, shown in Table 9 to be -18.1, is very sensitive to specification of the probit equation. Therefore the training impact estimate is sensitive to that specification and should be viewed as rather unreliable.

8. REEMPLOYMENT SUCCESS OF PARTICIPANTS IN PSE

This analysis examines persons who participated in public service employment (PSE) programs in September of 1991, with the comparison group being persons who were registered as unemployed in June of 1991 and did not participate in retraining or PSE during that spell of unemployment. The aim of PSE is mainly one of income transfer to the long term unemployed while at the same time giving people regular work activity to arrest the deterioration of basic work place skills. Secondary aims include contribution to the public welfare and the public infrastructure so as to enhance future reemployment possibilities. The categories of activities which may be undertaken under PSE contract are few in number and are clearly specified in the Hungarian employment law. The main types of PSE work are maintenance of public facilities and assistance to social welfare agencies. The value of these activities is difficult to measure in market terms, the only real way being to measure the cost of inputs which is mainly a wage cost. While the main aim of PSE is not to promote reemployment in a normal job this would be a favorable outcome, and it is one which is possible to objectively measure. Results of such an analysis are presented in this section.

Just as for retraining, the group of persons selected for PSE do not have the same characteristics as the average unemployed person. As indicated in Table 4 relative to the typical registered unemployed person, a PSE participant is more likely to be male, less educated, and less

likely to have formal job skills and credentials. We therefore examine the labor market success of PSE participants using the same variety of techniques as was used for evaluating retraining. Following is a description of the usual process of selecting candidates for participation in PSE provided by a county labor programs administrator--Dr. Janos Simko of Borsod-Abauj-Zemplen county:

> It is local employment centers that refer unemployed persons to PSE. However, it often happens that an employer selects someone from among the unemployed before referral. These requests are usually filled by a local employment center, because it is important for local employment centers to reduce the number of idle unemployed and there are no special criteria for referral to PSE. The unemployed are obliged to accept PSE work, if it conforms to their education and skills. Mostly unemployed with low education are sent to these jobs. If an unemployed person does not accept a PSE job suitable for him, he can be denied eligibility for unemployment compensation payments.

There is clear sample selection in referral to PSE with the resulting sample of participants having characteristics completely different from those referred to retraining.

8.1 Unadjusted Impact Estimates for PSE

From Table 4 we see that on the survey date people who participated in PSE were 16.4 percent less likely to be reemployed in a normal job than were persons who were registered as unemployed and never participated in an ALP. Furthermore, this difference is significant at the 95 percent confidence level. It should be noted that this unadjusted reemployment rate is 6.1 percentage points higher than observed for the same group in November of 1992.

Persons who participated in PSE and were reemployed in normal jobs also appear to have monthly earnings which are about HUF 2,200 lower than persons in the comparison group, with this difference statistically significant at the 90 percent confidence level.

8.2 Impact Estimates Using a Matched Pairs Comparison Group for PSE

In an attempt to correct for the sample selection which resulted in the group of PSE participants being, more male, less educated, and less specialized than persons in the comparison group, the matched pairs method was used to form a synthetic comparison group with similar characteristics. Examining means on the thirteen exogenous characteristics in Table 6 we see that the synthetic comparison group looks much like the group of PSE participants in terms of observable characteristics. However, the rates of reemployment in a normal job are statistically significantly different between the two groups, with the point estimate for those who participated in PSE being 15.0 percent lower than the comparison group. This differential is somewhat smaller than the unadjusted difference given in Table 4. Clearly comparing the labor market success of PSE participants with unemployed persons who have similar characteristics is more

even handed. Even this comparison probably overestimates the real reemployment rate differential because there are probably unobserved factors such as motivation or personal contacts which explain why people who could be selected for PSE choose to do otherwise and enjoy better reemployment success.

Average monthly earnings on the current normal job for the synthetic comparison group were not significantly different from the group of PSE completers. This result is undoubtedly due to the fact that persons with low qualifications compete for jobs near the bottom of the earnings distribution. With the monthly minimum wage at HUF 8,000 for full time work, earnings of persons summarized in Table 6 are only slightly above this level.

8.3 Regression Adjusted Impact Estimates for PSE

Regression adjusted impact estimates are presented in Tables 8 and 8a, with logit estimates given in the former and ordinary least squares (OLS) estimates in the latter. Since reemployment probabilities for the PSE and comparison groups ranged from only 15 to 35 percent, the limited range on the dependent variable may have caused some bias in estimating parameters by OLS, however the OLS and logit estimates very close.

Logit impact estimates presented in Table 8 indicate that on the survey date people who completed PSE were 16.2 percent less likely to be reemployed in a normal job than were persons in the comparison group. This difference is significant at the 95 percent confidence level. The ordinary least squares estimate of -14.2 percent given in Table 8a was also significant at the 95 percent confidence level. To produce these estimates regressions were run on the pooled sample of 393 PSE completers and 589 comparison group members who registered as unemployed in June 1991 and had not participated in retraining or PSE by November 1992.[12] The point estimates should therefore be interpreted as the mean response for the PSE and comparison groups evaluated at the mean characteristics of the combined sample. That is, if the PSE participants had the mean characteristics of the combined sample they would be 14.2 percent less likely to have a normal job at the survey date than the average person in the combined sample.

From similar regressions also reported in Tables 8 and 8a, persons who completed PSE also appear to have monthly earnings which are HUF 236 lower than persons in the comparison group, but this difference is not statistically significant.

8.4 Selection Bias Corrected Impact Estimates for PSE

Selection bias corrected impact estimates presented in Table 9 indicate that on the survey date people who completed PSE were 13.3 percent less likely to be reemployed in a normal job than if they had not participated in PSE. This difference is significant at the 95 percent

[12]A slightly smaller sample resulted because of missing values for some of the independent variables. The earnings equation was estimated only on those who were employed in a normal job on the survey date.

confidence level. Using the decomposition in the methodology section given above we estimate that -12.7 percentage points of the impact are due to observable characteristics while 0.6 percentage points are due to selection bias.

Using the Heckman selection bias correction procedure to adjust for the fact that they did not participate in PSE, the mean rate of reemployment in a normal job among the comparison group was just about equal to the unadjusted rate as reported in Table 4. The selection bias correction factor was not statistically significant in either of the equations estimated. The selection bias correction method only had the effect of slightly lowering the estimate of the reemployment rate of PSE participants.

9. SUBGROUP ANALYSIS

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policy makers who may consider targeting retraining or PSE to certain groups like those without a specialization or older unemployed persons. Another is to identify any possible biases in the effects--a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective. This section reports on program impacts for sixteen subgroups defined by categorical variables for the following seven characteristics: age (three groups), gender, educational attainment, non-manual specialization, unemployment insurance (UI) benefit receipt, whether or not there was previous work experience, and county (three groups). The dummy variables actually used indicated the following: age 25 or less, age 26 to 40 or otherwise, if female, education 8 years or less, non-manual specialization or not, received UI since June 1991 or not, worked before June 1991 or not, registered in Hajdu county or not, registered in Borsod county or not.

All subgroup treatment impacts were simultaneously estimated in a single regression model. The specification employed allows the treatment response for each subgroup to be estimated controlling for the influence of other subgroup characteristics. For example, the model allows estimation of treatment impacts associated with being female controlling for the fact that females are more likely to have more than 8 years education and less likely to have a non-manual specialization. The subgroup treatment impact estimates are reported in Table 10 for retraining and Table 11 for PSE. Suppressing subscripts and using matrix notation, the regression equation estimated can be written:

$$(5) \qquad Y = a + PB + GC + GPD' + u$$

where Y is the outcome measure, reemployed in a normal job, a is the intercept, B, C, and D, are conformable parameter vectors, P is the indicator of participation in either retraining or PSE, G is the matrix of dummy variables which code for membership in a subgroup, and u is a mean zero normally distributed random error term. Equation (5) specifies a complete one-way interaction model. It allows simultaneous estimation of all subgroup treatment impacts, but

imposes linear restrictions on their estimates. Treatment impacts for a particular subgroup are computed as the sum of the parameter estimate on the product of the subgroup dummy variable and the treatment indicator plus the sum of parameter estimates on the product of subgroup dummies the treatment indicator multiplied by their respective population shares. In each computation, parameter estimates for the complement to the subgroup of interest are omitted.

The subgroup impact estimates may be considered to be regression adjusted in the sense that each subgroup impact is estimated while simultaneously allowing impacts to vary across other subgroups considered. There is no formal attempt to control for sample selection in the subgroup impact analysis.

9.1 Subgroup Analysis of Retraining

The sample of 445 persons who completed retraining was quite small to begin with, and further dividing it to do subgroup analysis yielded very small sample sizes. Therefore, the standard errors on the subgroup impact estimates were rather large, and while several individual impact estimates for subgroups were made with statistical precision there were no significant differences between subgroups of a particular category of characteristic. For the earnings impact outcome, because it only involves people who had a normal job sample subgroup sample sizes become absolutely too small. Subgroup impacts are not examined for earnings, but only for reemployment in a normal job.

Results presented in Table 10 show that there were no statistically significant differences between subgroups of any particular category, but it is worthwhile to discuss the different tendencies. The effect of retraining on being in a normal job steadily increased with age and was most beneficial for the group of older workers (over 40). There was virtually no difference in impact by gender with men showing just over a one percentage point greater impact on their success rate than women. Those with 8 or less years of education had their success of reemployment in a normal job boosted an average of 22 percentage points by retraining while those with more education gained only an average of 7 percentage points. Similarly, those without a non-manual specialization benefitted nearly three times more than those who entered retraining with a non-manual specialization. Those who received UI since June 1991 and completed retraining got reemployed relatively more frequently than those who completed retraining but had not drawn UI benefits recently. Retraining also was more of a reemployment aid to those who had prior work experience. Among the three counties retraining participants in Borsod county gained about twice as much success in reemployment from retraining than did participants from Hajdu and Somogy.

The most powerful and appealing results from this analysis are the suggestions that groups considered to be the most difficult to reemploy appear to have gained the greatest help in getting a normal job by retraining, these groups are: older workers, those with less education, and those without a manual trade.

9.2 Subgroup Analysis of PSE

In Table 11 we see that despite the fact that the PSE sample was only 445 persons in size, because the differences in the proportion employed in a normal job between the PSE and comparison groups are large, the subgroup program impacts for PSE are nearly all estimated with statistical precision. However, because very few of those in PSE actually were in a normal job on the survey date, very few had earnings and subgroup sample sizes were too small to do an impact analysis on earnings.

PSE tended to help gain employment in a normal job more often for persons in the older age group (over 40), females, those with less education, and those without a non-manual specialization. Working in PSE helped in gaining a normal job twice as much in Borsod county as it did in Hajdu and Somogy counties. There was a significant difference in the proportion in a normal job between the middle (26 to 40) and the older (over 40) age groups, and between those with less than 8 years of schooling and those with more. The differences by gender, and between Borsod and the other two counties were nearly significant.

10. COUNTY ANALYSIS

Tables 12, 13, and 14 compare exogenous characteristics and outcome variables across the three counties of Borsod, Hajdu, and Somogy within each of the three programs. Overall there are some differences in the characteristics and outcomes between Borsod and Hajdu counties, but the greatest number of statistically significant differences is between Somogy and the other two counties. Because the impact analysis was done by county in the previous section and we are simply interested in comparing across counties within each sample here, we use the full samples available and do not reduce numbers to satisfy analytic requirements.

10.1 The Comparison Group of Registered Unemployed Across the Counties

For the full sample of 604 persons who were registered as unemployed in June of 1991, both Hajdu and Somogy had smaller fractions of persons with special reemployment difficulties than Borsod. However, while statistically significant these differences are so small that they may just be due to differing judgements of clerks or standards in the different counties. Compared to both Borsod and Hajdu, Somogy had fewer people who received UI since June 1991 and more people who never worked before June 1991. In terms of the outcome variables the highest fraction were in normal jobs at the survey date in Hajdu county (37.9%), and these persons also commanded the highest monthly earnings (HUF 16,351). The smallest percent in a normal job on the survey date was in Borsod county (27.1%), with these persons receiving nearly the average monthly earnings. Somogy was in between the other two counties in terms of reemployment with 30.2% in a normal job earning the lowest average of HUF 14,013 per month.

10.2 The Retraining Sample Across the Counties

In the full sample of 445 persons assigned to retraining Hajdu differed from Borsod in three exogenous characteristics, with Hajdu having a slightly lower percent with manual specialization, higher percent who had never worked before, and a lower percent with special problems. Compared to the other two counties Somogy had a higher mean age of participants, a much greater proportion from white collar occupations, and a smaller percentage who had never worked before. Somogy also tended to have a somewhat higher percentage of females in retraining than the other two counties.

There were no statistically significant differences between the counties in terms of the outcome variables percent in a normal job and earnings on the job. On the survey date a slightly higher percent were in normal jobs in Hajdu (59.6%), than in Borsod (54.6%) or Somogy (53.4%). Monthly earnings were somewhat different across the counties ranging from HUF 15,073 in Borsod to HUF 19,190 in Somogy.

10.3 The PSE Sample Across the Counties

In the PSE samples relative to Hajdu county, Borsod county had a higher percentage who never worked before, had special problems finding a job, or were unskilled workers. Somogy county differed from either Borsod or Hajdu or both in all but two of the exogenous characteristics: age and percentage with a manual specialization. PSE workers in Somogy were far more likely to be male, low educated, without technical specialization, a previous blue collar worker, and a previous UI recipient than PSE workers in Borsod and Hajdu counties.

In terms of moving PSE workers into normal jobs a significantly greater fraction made the switch in Hajdu (17.0%) and Borsod (16.0%) than in Somogy (6.5%). While significantly different only from Somogy, earnings on the new jobs were also higher in Hajdu (HUF 14,045) where they averaged about HUF 3,500 per month higher than Somogy and HUF 500 higher than Borsod.

10.4 Impacts of Retraining and PSE within the Counties

Looking at Tables 12, 13, and 14 one is tempted to compute simple differences between means for the separate groups for each county. This exercise should be avoided as it is misleading. Refer instead to Tables 10 and 11 for subgroup impacts of retraining and PSE by county. Note that Table 12 includes all 604 observations of registered unemployed, because of sample size considerations it does not exclude retraining and PSE participants--a restriction necessary for comparing impacts. Also Table 14 includes all 429 PSE participants, it is not restricted to those who left their 1991 PSE association at some time and therefore does not allow for a valid estimation of program impact.

Examining the impact estimates of retraining on the percent of people in a normal job by county given in Table 10 we see that only in Borsod county was the impact significantly different from zero. Furthermore, no single county estimate was statistically different from any other

county estimate. The estimates of retraining on the percentage of people who were in a normal job were as follows: an increase of 15.9 percent in Borsod county, an increase of 7.9 percent in Hajdu county and an increase of 6.4 percent in Somogy county.

The impact estimates of PSE on the percent of people in a normal job by county given in Table 11. Because many fewer people who participated in PSE were in normal jobs compared to persons who registered as unemployed and did not use an ALP, all program impact estimates are statistically significant. However, no single county estimate was statistically different from another county estimate. In all counties participants in PSE were less likely to be in a normal job than were persons in the comparison group with the estimated percentage point reductions being: 11.3 percent in Borsod county, 20.5 percent in Hajdu county, and 19.4 percent in Somogy county.

11. THE TIMING OF REEMPLOYMENT

As mentioned in the introduction to this paper, analysis of a previous survey of the population studied here revealed a fundamental problem in evaluating the effect of the active programs on reemployment--many of those interviewed were still involved in retraining or PSE. To illustrate this a table from O'Leary (1993) is repeated here as Table 15. The table shows the timing of employment in the first normal job after entering each of the three programs.[13] Reemployment frequencies are arrayed by month from June 1991 to November 1992. There is a clear difference in the timing between those who simply registered as unemployed and those who completed retraining. Obviously training takes time. The bulk of first new normal jobs for the sample of persons who completed retraining occurred in the second half of the period, while for the registered unemployed sample the majority of first normal jobs occurred in the first half of the period. Fully 106 of the 474 retrainees interviewed in November 1992 had not completed their course at the time of the interview.[14]

Among PSE participants there is no clear pattern of timing in the transition to the first normal job is revealed in Table 15 based on the November 1992 survey. It appears that the probability of taking a normal job does not depend on the length of time spent working on PSE. The timing of reemployment probably depends more on the random timing of when an opportunity for a regular job arises.

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[13]This outcome indicator is different from that used for the impact analysis presented in this paper. The measure used: in a normal job on the survey date, is less subject to the type of bias exposed by the indicator: obtained a normal job, which is based on the variable summarized in Table 18.

[14]A 1992 summary of follow-up surveys for the regional retraining center (ERAK) at Miskolc found that 45 percent of retrainees had been reemployed when survey one month after retraining, while 60 percent were found to be reemployed when surveyed six months after retraining.

Table 16 presents information about the date on which the current normal job began for persons in the analytic sample from the November 1993 survey. The retraining and PSE samples show reemployment timing patterns similar to the earlier survey summarized in Table 15.[15] That is, the retraining participants tended to gain employment in normal jobs toward the end of the period observed, and there is no particular timing pattern for the PSE participants.

Perhaps the most interesting result about the timing of reemployment concerns the durability of new jobs. While people in retraining entered jobs later, because they spent time in retraining, they appear to hold the normal jobs they obtain longer than the comparison group of registered unemployed. Table 15 shows when people started their first normal job and Table 16 shows when people began their current normal job. The registered unemployed generally started their first normal job sooner, but many had left that job by the date of the second survey. The retraining participants a very high rate of retaining their first normal job after retraining. For the PSE participants there was no particular pattern in the timing of obtaining or the retention of normal jobs.

As a final note to the timing of reemployment Table 17 provides some information on the fraction of people not in a normal job on the November 1993 survey date who did spend some time in a normal job since November 1992. Among the registered unemployed, retraining participants, and PSE workers not currently in a normal job the percentages who had been in one were 9.7, 15.9; and 14.1 respectively. This provides further evidence on the usefulness of retraining and PSE in reemploying the unemployed, it also reveals something about the dynamic aspect of unemployment in Hungary. Measuring reemployment at a point in time fails to reveal the natural turnover which occurs among both jobs and the stock of unemployed.

12. SUMMARY

In November, 1992 surveys were conducted in the three Hungarian counties of Borsod-Abauj-Zemplen, Hajdu-Bihar, and Somogy as part of the first scientific attempt to examine the impact of labor market programs in post socialist Hungary. The surveys were organized by the International Labor Office (ILO) mission in the Hungarian Ministry of Labor which is financed by a grant from the government of Japan. An attempt to reinterview survey respondents was undertaken in November 1993. Results of the reinterview effort, which succeeded in contacting about 93 percent of previous respondents, are reported on in this paper.

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[15]Table 16 shows seven persons (five in normal jobs earlier than should be expected. Before June of 1991 when they were registered as unemployed two persons appeared to have already obtained normal jobs which they still held in November 1993, and before September 1991 five in PSE appeared to have already obtained normal jobs which they still held in November 1993. Data errors were probably committed in these cases, but the observations were retained for analysis because of the small sample sizes and the supposition that these persons were indeed in normal jobs at on the November 1993 survey date.

The surveys were designed to investigate the impact of retraining and public service employment (PSE) on labor market success, by comparing outcomes for participants in these programs to others who were registered as unemployed but did not participate in retraining or PSE before November of 1992. Labor market success is measured by whether or not a person is reemployed in a "normal job"[16] and by the earnings on that job.

The November 1993 sample included 604 people who were registered unemployed, 445 retraining participants, and 429 who participated in PSE. While the samples available for analysis from the three groups are relatively small, they were selected by random processes. The samples are also believed to be representative of the three populations from which they were drawn.

Before reviewing the results of this survey a few other comments should first be made. The possibility of gaining reemployment in a normal job was certainly affected by the fact that the economy in Hungary was declining dramatically during the period when the people studied were trying to achieve labor market success. The survey studied persons using labor market programs in Hungary between the second half of 1991 and the end of 1993. In June of 1991 the number of registered unemployed was 186,000 in Hungary, when the survey was completed in November 1993 the number had risen to over 700,000--an increase of more than 275 percent during the period. Reemployment is difficult to achieve even in an expanding economy. That we observed any positive effect of retraining on employment in a normal job is surprising in the face of such rapidly rising unemployment. There are at least two other factors to bear in mind while examining the survey results. First, the samples on which inferences were drawn are quite small, and second, because of clear sample selection for participation in programs the designed comparison group is of limited value.

Table 18 summarizes the impact estimates of retraining on the two outcomes: in a normal job on the survey date, and monthly earnings on the job. The table presents estimates from each of the four methodologies used. The unadjusted estimates indicate that on the survey date people who completed retraining were 19.2 percentage points more likely to be reemployed in a normal job than were persons who were registered as unemployed and never participated in an ALP. Retrainees were also estimated to have monthly earnings which are about HUF 1,500 higher than persons in the comparison group.

In an attempt to correct for the sample selection which resulted in the group of training participants being younger, more female, more educated, and more specialized than persons in the comparison group, three different estimation methods were attempted (1) matched pairs which involved forming a synthetic comparison group with characteristics similar to the participant group, (2) regression adjustment using observable characteristics as adjustment factors, and (3) an explicit selection bias adjustment method. The high degree of sensitivity to empirical specification of the selection process leads us to greatly discount results from the later method. The close agreement between results generated from the matched pairs and regression adjustment

[16]A "normal job" is one not subsidized by money from the Employment Fund.

method suggest that the true adjusted training impact is in the range of 1 to 6 additional percentage points of reemployment, with a modest gain of from HUF 500 to HUF 2,000 in monthly earnings. That is, among similar individuals, retraining participants were only mildly more successful in gaining reemployment than were non-participants.

While the samples were too small to yield reliable estimates of subgroup impacts of retraining, the analysis indicated that retraining was most beneficial for the following subgroups: those over 40 years of age, males, those with 8 or less years of education, those without non-manual specialization, and those who had some previous work experience. Among the three counties the impact of retraining greatest in Borsod where the 16 percentage point impact was roughly double that in Hajdu and Somogy.

Table 19 summarizes the impact estimates of public service employment (PSE) following the same format as used in Table 18 for retraining. Estimates are presented from each of the four different methodologies. The unadjusted estimates indicate that on the survey date people who participated in PSE were 16.4 percent less likely to be reemployed in a normal job than were persons who were registered as unemployed and never participated in an ALP. PSE participants were also estimated to have monthly earnings which are about HUF 2,200 lower than persons in the comparison group.

In an attempt to correct for the sample selection which resulted in the group of PSE participants being more male, less educated, and less skilled and specialized than persons in the comparison group, the same three alternative estimation methods were used for the PSE sample. The three methods yielded estimates of the PSE impact on the percent of persons in a normal job ranging from a reduction of 13.3 to 16 percentage points; the earnings impacts ranged from a decline of HUF 236 per month to HUF 1,049 per month. It appears that selection bias is less of a problem in the evaluation of PSE than retraining. For the PSE case there is generally more consensus among the alternative methods. The results suggest that PSE participants were mildly more successful in gaining regular employment than is suggested by the unadjusted impact estimates.

Subgroup analysis of the PSE sample indicated that PSE tended to be followed by employment in a normal job more often for older people, females, people with fewer years of formal education, and those without a non-manual specialization. Those selected for PSE were more likely to be rather young, male, less educated, and without formal skills and credentials.

An analysis of the timing of reemployment indicated that use of the November 1993 survey data allowed for a better estimate of the effect of retraining on employment in a normal job. It also revealed that retraining appears to lead to reemployment in normal jobs which last longer than normal jobs obtained by unemployed persons not receiving retraining.

Considering all of the evaluation results taken together, it appears that retraining may have slightly helped improve the chances for reemployment in a non-subsidized job. In terms of

simple reemployment rates, the gain in reemployment was probably not sufficient to justify the cost of retraining. However, since the durability of jobs appears to be better for those who were retrained, the long term earnings impacts may be significant. Certainly net social benefits from retraining could be improved by retargeting services to more males, older persons, those with fewer years of formal education, and those with no non-manual specialization.

Overall, public service employment (PSE) appeared to have been a successful strategy to keep people out of unemployment, but it did not appear to be a cost effective means of getting people reintegrated into normal non-subsidized jobs. PSE is probably best viewed as an income transfer program that has some side effects of preventing deterioration of basic work habits. In terms of reemployment, the social impact of PSE could be improved if it were targeted to include more older persons and females.

To get a better understanding of the effects of retraining and PSE, it would be useful if some future evaluations could be based on random assignment of eligible persons to programs and comparison groups. This would be a reasonable and equitable way to ration training courses, and perhaps PSE slots, when they are over subscribed. The benefit in terms of understanding program effects would be great.

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Table 1
Survey II Respondents by Labor Market Program and County

	Borsod	Hajdu	Somogy	Total
Registered Unemployed	262	203	139	604
Retraining	196	146	103	445
Public Service Employment	187	135	107	429
Totals	645	484	349	1,478

Survey I Respondents by Labor Market Program and County

	Borsod	Hajdu	Somogy	Total
Registered Unemployed	281	223	144	648
Retraining	207	159	108	474
Public Service Employment	196	142	114	452
Totals	684	524	366	1,574

Survey Sample Design by Labor Market Program and County

	Borsod	Hajdu	Somogy	Total
Registered Unemployed	288	212	144	644
Retraining	216	159	108	483
Public Service Employment	216	159	108	483
Totals	720	530	360	1,610

Table 2
Comparison of Means of Exogenous and Endogenous Variables Across Labor Market Programs
1993 Survey Respondents

Variable	Registered Unemployed	Entered Retraining	Public Service Employment
Age (Years)	34.0	25.0**	31.3**
Gender (Percent Male)	55.1	43.4**	67.5**
Education (Years)	9.8	11.8**	8.7**
Specialization (Manual, Percent)	36.1	31.0*	17.9**
Specialization (Technical, Percent)	10:3	24.3**	6.5**
White Collar Worker (Percent)	14.9	49.2**	7.4**
Received UI Since 6/91 (Percent)	79.0	71.0**	38.9**
Never Worked Before 6/91 (Percent)	18.6	42.1**	18.5
Special Problems Finding Job (Percent)	5.0	2.5**	7.7*
Unskilled Worker (Percent)	31.9	8.3**	66.7**
Borsod County (Percent)	43.4	44.0	43.6
Hadju County (Percent)	33.6	32.8	31.5
Somogy County (Percent)	23.0	23.2	24.9
Percent in Any Job in November 1993	35.8	56.0**	39.2
Percent with a Normal Job in November 1993	31.4	50.6**	14.0**
Percent with a Normal Job in November 1992	26.8	30.8	8.2**
Difference in Percent with a Normal Job ('93-'92)	4.6@@	19.8@@	5.8@@
Monthly Earnings on Normal Job in November 1993	15,307	16,875*	13,355*
Monthly Earnings on Normal Job in November 1992	12,567	13,861	10,653
Difference in Monthly Earnings on Normal Job ('93-'92)	2,740@@	3,014@@	2,702@@
Sample Size	604	445	429

* Significantly different from full sample of registered unemployed at the 90 percent confidence level.

** Significantly different from full sample of registered unemployed at the 95 percent confidence level.

@ Difference between years significant at the 90 percent confidence level.

@@ Difference between years significant at the 95 percent confidence level.

Table 3
Activity of the Sample in November 1993

	Registered Unemployed	Retraining Participant	PSE Worker
Total	604	445	429
Exclusion for Analysis	15	0	36
Sample for Analysis[1]	589	445	393
In a Normal Job	185	225	59
Not in a Normal Job	404	220	334
In Any Job	209	249	132
Not in Any Job	380	196	261
Registered as Unemployed	238	104	204
Receiving Unemployment Compensation	19	30	77
In an Active Labor Market Program			
Group Training	5	13	2
Individual Training			1
Public Service Employment	14	10	71
Self Employment		3	
Wage Subsidy Job	6	5	1
Investment Subsidy Job	4	4	1
Work Sharing		2	
Early Retirement	47		3

[1]From the comparison sample of registered unemployed 3 were excluded because they were involved in retraining in November 1992, and 12 were excluded because they participated in public service employment (PSE) in November 1992. There were no exclusions from the November 1993 sample of retraining participants since all had left training they participated in during or prior to November 1992. From the sample of 429 claimants who were in PSE in November 1992, 36 were excluded from analysis because they had not left PSE between then and November 1993.

Table 4
Comparison of Means of Exogenous and Endogenous Variables
Across Labor Market Programs
1993 Survey Respondents

Variable	Registered Unemployed no ALP[1]	Completed Retraining	No Longer in PSE
Age (Years)	34.3	25.0**	31.2**
Gender (Percent Male)	55.5	43.4**	67.4**
Education (Years)	9.8	11.8**	8.7**
Specialization (Manual, Pct.)	36.5	31.0*	17.0**
Specialization (Technical, Pct.)	10.4	24.3**	6.6**
White Collar Worker (Percent)	14.9	49.2**	8.1**
Received UI Since 6/91 (Percent)	79.3	71.0**	40.7**
Never Worked Before 6/91 (Percent)	17.7	42.1**	18.4
Special Problems Finding Job (Pct.)	4.8	2.5*	8.2**
Unskilled Worker (Percent)	31.8	8.3**	67.1**
Borsod County	43.1	44.0	44.3
Hadju County	33.6	32.8	29.5
Somogy County	23.3	23.2	26.2
Percent in Any Job in November 1993	35.5	56.0**	33.6
Percent with a Normal Job in November 1993	31.4	50.6**	15.0**
Percent with a Normal Job in November 1992	27.2	30.8	8.9**
Difference in Percent with a Normal Job ('93-'92)	4.2@@	19.8@@	6.1@@
Monthly Earnings on Normal Job in Nov. 1993	15,388	16,875	13,200*
Monthly Earnings on Normal Job in Nov. 1992	12,611	13,861	10,653
Difference in Monthly Earnings on Normal Job ('93-'92)	2,777@@	3,014@@	2,547@@
Sample Size	589	445	393

[1]Not in retraining or PSE prior to November 30, 1992.

* Significantly different from full sample of registered unemployed at the 90 percent confidence level.
** Significantly different from full sample of registered unemployed at the 95 percent confidence level.
@ Difference between years significant at the 90 percent confidence level.
@@ Difference between years significant at the 95 percent confidence level.

Table 5
Means of Retraining and Comparison Groups
for Exogenous and Endogenous Variables
Comparison Group Formed Using Matched Pairs Method
1993 Survey Respondents

Variable	Retraining (1)	Comparison Group (2)	Impact Estimate (1) - (2)
Age (Years)	25.0	26.8	-1.8**
Gender (Percent Male)	43.4	42.7	0.7
Education (Years)	11.8	11.6	0.2
Specialization (Manual, Pct.)	31.0	31.7	-0.7
Specialization (Technical, Pct.)	24.3	23.8	0.5
White Collar Worker (Percent)	49.2	50.3	-1.1
Received UI Since 6/91 (Percent)	71.0	70.3	0.7
Never Worked Before 6/91 (Percent)	42.1	40.1	2.0
Special Problems Finding Job (Pct.)	2.5	2.5	0.0
Unskilled Worker (Percent)	8.3	9.9	-1.6
Borsod County (Percent)	44.0	44.0	0.0
Hadju County (Percent)	32.8	32.8	0.0
Somogy County (Percent)	23.1	23.1	0.0
In Any Job (Percent)	56.0	49.4	6.6
Now Has Normal Job (No Subsidy, Pct.)	50.6	49.4	1.2
Earnings on Normal Job (HUF)	16875	14823	2052
Sample Size	445	445	445

* Difference between retraining participant and comparison group significant at the 90 percent confidence level.
** Difference between retraining participant and comparison group significant at the 95 percent confidence level.

a) Matched pairs are formed by selecting for each person in the training sample that person in the sample of unemployed who did not participate in an ALP the one most similar in the characteristics: Age, gender,education, specialization (manual and technical), collar color, UI recipiency, prior working history, special job finding problems, and worker skill. Matches are made using the Mahalanobis distance measure. The distance between two observations is the sum of squared differences in characteristics. Ties are resolved randomly. To equally weight the characteristics in matching, distances are computed for standardized characteristics where the means and standard deviations are computed on the combined retraining and comparison group samples.

Table 6
Means of PSE and Comparison Groups
for Exogenous and Endogenous Variables
Comparison Group Formed Using Matched Pairs Method
1993 Respondents

Variable	PSE (1)	Comparison Group (2)	Impact Estimate (1) - (2)
Age (Years)	31.2	30.6	0.6
Gender (Percent Male)	67.4	64.3	3.1
Education (Years)	8.7	8.8	-0.1
Specialization (Manual, Pct.)	17.0	17.3	-0.3
Specialization (Technical, Pct.)	6.6	6.6	0.0
White Collar Worker (Percent)	8.1	7.8	0.3
Received UI Since 6/91 (Percent)	40.7	44.3	-3.6
Never Worked Before 6/91 (Percent)	18.4	17.2	1.2
Special Problems Finding Job (Pct.)	8.2	8.1	0.1
Unskilled Worker (Percent)	67.1	62.7	4.4
Borsod County (Percent)	44.3	44.8	-0.5
Hadju County (Percent)	29.5	29.5	0.0
Somogy County (Percent)	26.2	25.7	0.5
In Any Job (Percent)	33.6	30.0	3.6
Now Has Normal Job (No Subsidy, Pct.)	15.0	30.0	-15.0**
Earnings on Normal Job (HUF)	13200	14249	-1049
Sample Size	393	393	393

* Difference between retraining participant and comparison group significant at the 90 percent confidence level.
** Difference between retraining participant and comparison group significant at the 95 percent confidence level.

a) Matched pairs are formed by selecting for each person in the PSE sample that person in the sample of unemployed who did not participate in an ALP the one most similar in the characteristics: Age, gender, education, specialization (manual and technical), collar color, UI recipiency, prior working history, special job finding problems, and worker skill. Matches are made using the Mahalanobis distance measure. The distance between two observations is the sum of squared differences in characteristics. Ties are resolved randomly. To equally weight the characteristics in matching, distances are computed for standardized characteristics where the means and standard deviations are computed on the combined PSE and comparison group samples.

Table 7
Adjusted Marginal Impacts on Reemployment Outcomes
Retraining and Registered Unemployed Sample
for the 1993 Survey
(Standard errors in parentheses)

	Dependent Variable		
Independent Variable	Fraction with Any Job#	Fraction with a Normal Job#	Level of Earnings## (HUF)
Marginal Impact of Retraining at Means	0.070*	0.063*	493
	(0.039)	(0.037)	(913)
Age (Years)	-0.006**	-0.005**	208**
	(0.002)	(0.002)	(59)
Gender (Male=1)	-0.053	-0.069**	4388**
	(0.035)	(0.034)	(871)
Education (Years)	0.051**	0.048**	1776**
	(0.011)	(0.011)	(305)
Specialization (Manual=1)	0.087*	0.114**	-633
	(0.046)	(0.044)	(1103)
Specialization (Technical=1)	0.025	0.040	1239
	(0.071)	(0.068)	(1702)
Received UI Since 6/91 (Yes=1)	-0.058	-0.055	1182
	(0.041)	(0.040)	(988)
Never Worked Before 6/91 (Yes=1)	-0.047	-0.046	-76
	(0.045)	(0.043)	(1124)
Special Problems Finding Job (Yes=1)	0.028	-0.068	2265
	(0.095)	(0.099)	(2787)
Hadju County (Yes=1)	0.093**	0.092**	1528
	(0.039)	(0.038)	(962)
Somogy County (Yes=1)	0.005	-0.002	637
	(0.043)	(0.042)	(1109)
Sample Size	1007	1007	397
Goodness of Fit	-622.82	-607.27	0.317
Joint Significance	135.78**	136.06**	16.27**

* Parameter estimate significant at the 90 percent confidence level.
** Parameter estimate significant at the 95 percent confidence level.
\# Estimated by logit. Goodness of fit statistic is log of the likelihood at the optimal solution. Joint significance is chi square statistic-2 log of the likelihood ratio.
\#\# Estimated by ordinary least squares. Goodness of fit statistic is R^2, joint significance statistic is F.

Table 7a
Regression Adjusted Estimates of the Impact of Retraining
for the 1993 Survey
(Standard errors in parentheses)

	Dependent Variable		
Independent Variable	Fraction with any Job	Fraction with a Normal Job	Level of Earnings (HUF)
Control Group at Means	0.411**	0.367**	16105**
	(0.021)	(0.021)	(643)
Impact of Retraining at Means	0.069**	0.064*	493
	(0.036)	(0.035)	(913)
Age (Years)	-0.005**	-0.004**	208**
	(0.002)	(0.002)	(59)
Gender (Male=1)	-0.048	-0.062**	4388**
	(0.031)	(0.030)	(871)
Education (Years)	0.044**	0.041**	1776**
	(0.010)	(0.010)	(305)
Specialization (Manual=1)	0.079*	0.104**	-633
	(0.042)	(0.041)	(1103)
Specialization (Technical=1)	0.030	0.049	1239
	(0.065)	(0.064)	(1702)
Received UI Since 6/91 (Yes=1)	-0.050	-0.047	1182
	(0.037)	(0.037)	(988)
Never Worked Before 6/91 (Yes=1)	-0.034	-0.033	-76
	(0.041)	(0.040)	(1124)
Special Problems Finding Job (Yes=1)	0.029	-0.042	2265
	(0.081)	(0.079)	(2787)
Hadju County (Yes=1)	0.085**	0.089**	1528
	(0.034)	(0.034)	(962)
Somogy County (Yes=1)	0.006	-0.000	637
	(0.038)	(0.038)	(1109)
Sample Size	1007	1007	397
R2	0.125	0.124	0.317
F	12.97**	12.79**	16.27**

* Parameter estimate significant at the 90 percent confidence level.
** Parameter estimate significant at the 95 percent confidence level.

Table 8
Adjusted Marginal Impacts on Reemployment Outcomes
PSE and Registered Unemployed Sample
for the 1993 Survey
(standard errors in parentheses)

	Dependent Variable		
Independent Variable	Fraction with any Job#	Fraction with a Normal Job#	Level of Earnings## (HUF)
Impact of PSE at Means	-0.021	-0.162**	-236
	(0.037)	(0.032)	(1319)
Age (Years)	-0.005**	-0.004**	137**
	(0.002)	(0.001)	(61)
Gender (Male=1)	-0.049	-0.073**	4056**
	(0.034)	(0.028)	(1029)
Education (Years)	0.042**	0.044**	1070**
	(0.012)	(0.009)	(369)
Specialization (Manual=1)	0.061	0.033	-230
	(0.050)	(0.039)	(1342)
Specialization (Technical=1)	0.007	-0.031	1673
	(0.080)	(0.0612)	(2058)
Received UI Since 6/91 (Yes=1)	-0.142**	-0.095**	1602
	(0.037)	(0.031)	(1123)
Never Worked Before 6/91 (Yes=1)	-0.054	-0.001	204
	(0.049)	(0.038)	(1383)
Special Problems Finding Job (Yes=1)	0.003	-0.025	2278
	(0.073)	(0.069)	(2692)
Hadju County (Yes=1)	0.138**	0.079**	1643
	(0.037)	(0.030)	(1074)
Somogy County (Yes=1)	0.056	-0.007	-328
	(0.041)	(0.036)	(1366)
Sample Size	967	967	240
Goodness of Fit	-564.42	-454.07	.189
Joint Significance	117.72**	175.56**	4.82**

* Parameter estimate significant at the 90 percent confidence level.
** Parameter estimate significant at the 95 percent confidence level.
# Estimated by logit. Goodness of fit statistic is log of the likelihood at the optimal solution. Joint significance is chi square statistic -2 log of the likelihood ratio.
Estimated by ordinary least squares. Goodness of fit statistic is R^2, joint significance statistic is F.

Table 8a
Regression Adjusted Estimates of the Impact of PSE
for the 1993 Survey
(Standard errors in parentheses)

Independent Variable	Dependent Variable: Fraction with any Job	Dependent Variable: Fraction with a Normal Job	Dependent Variable: Level of Earnings (HUF)
Control Group at Means	0.353**	0.305**	14935**
	(0.020)	(0.017)	(571)
Impact of Retraining at Means	-0.019	-0.142**	-236
	(0.034)	(0.030)	(1319)
Age (Years)	-0.004**	-0.003**	137**
	(0.002)	(0.001)	(61)
Gender (Male=1)	-0.048	-0.074**	4056**
	(0.031)	(0.028)	(1029)
Education (Years)	0.039**	0.042**	1070**
	(0.011)	(0.010)	(369)
Specialization (Manual=1)	0.063	0.041	-230
	(0.049)	(0.043)	(1342)
Specialization (Technical=1)	0.020	0.002	1673
	(0.077)	(0.068)	(2058)
Received UI Since 6/91 (Yes=1)	-0.133**	-0.086**	1602
	(0.034)	(0.030)	(1123)
Never Worked Before 6/91 (Yes=1)	-0.038	0.026	204
	(0.047)	(0.041)	(1383)
Special Problems Finding Job (Yes=1)	0.013	0.007	2278
	(0.062)	(0.055)	(2692)
Hadju County (Yes=1)	0.131**	0.087**	1643
	(0.034)	(0.030)	(1074)
Somogy County (Yes=1)	0.053	0.008	-328
	(0.037)	(0.033)	(1366)
Sample Size	967	967	240
R2	0.116	0.168	0.189
F	11.44**	17.50**	4.82**

* Parameter estimate significant at the 90 percent confidence level.
** Parameter estimate significant at the 95 percent confidence level.

Table 9
Percent in a Normal Job and Impacts of ALPs
Results Corrected for Selection Bias

	Retraining	Public Service Employment
Participants	50.7**	14.9**
Participants had they not Participated	18.7**	28.2**
Impact of Program	32.0**	-13.3**
Impact Controlling for Observable Characteristics	8.9*	-12.7**
Impact due to Selection Bias	23.1**	-0.6**
Coefficients on Mills Ratio in "Normal Job" Equation		
Participant Equation	17.6	4.6
	(15.1)	(8.3)
Non-Participant Equation	-18.1**	4.0
	(10.6)	(9.0)

* Significant at the 90% confidence level.
** Significant at the 95% confidence level.

Table 10
Impacts of Completing Retraining on Whether or not Currently in a Normal Job, by Subgroup
(Standard errors in parentheses)

Subgroup	Impact Estimate	Sample Size Retraining	Sample Size No ALP
Age 25 or less	0.0718 (0.0512)	294	213
Age 26 to 40	0.1363* (0.0742)	118	168
Age over 40	0.2637** (0.1027)	33	204
Female	0.1121** (0.0493)	250	261
Male	0.1297** (0.0475)	192	326
Education 8 years or less	0.2188** (0.0766)	74	274
Education More Than 8 Years	0.0706 (0.0432)	371	315
Non-Manual Specialization	0.0791* (0.0459)	307	374
No Non-Manual Specialization	0.2013** (0.0636)	138	215
Not Received UI Since 6/91	0.0488 (0.0657)	129	122
Received UI Since 6/91	0.1436** (0.0429)	316	467
Worked Before 6/91	0.1370** (0.0445)	249	482
Never Worked Before 6/91	0.0798 (0.0739)	181	104
Borsod County	0.1592** (0.0509)	196	254
Hajdu County	0.0789 (0.0597)	146	198
Somogy County	0.0640 (0.0675)	103	137

* Impact estimate significant at the 90 percent confidence level.
** Impact estimate significant at the 95 percent confidence level.

Table 11
Impacts of Participation in PSE on Whether or not Currently in a Normal Job, by Subgroup
(Standard errors in parentheses)

Subgroup	Impact Estimate	Sample Size PSE	Sample Size No ALP
Age 25 or less	-0.1588**	159	213
	(0.0506)		
Age 26 to 40	-0.1940**	149	168
	(0.0577)		
Age over 40	-0.0870@	85	204
	(0.0644)		
Female	-0.0991	127	261
	(0.0471)		
Male	-0.1867**	262	326
	(0.0380)		
Education 8 years or less	-0.0743	271	274
	(0.0498)		
Education More Than 8 Years	-0.2499**#	122	315
	(0.0592)		
Non-Manual Specialization	-0.1706**	326	374
	(0.0393)		
No Non-Manual Specialization	-0.1047	67	215
	(0.0766)		
Not Received UI Since 6/91	-0.1472**	233	122
	(0.0476)		
Received UI Since 6/91	-0.1544**	160	467
	(0.0384)		
Worked Before 6/91	-0.1557**	320	482
	(0.0339)		
Never Worked Before 6/91	-0.1339*	72	104
	(0.0802)		
Borsod County	-0.1131**	174	254
	(0.0427)		
Hajdu County	-0.2054**	116	198
	(0.0514)		
Somogy County	-0.1941**	103	137
	(0.0583)		

* Impact estimate significant at the 90 percent confidence level.
** Impact estimate significant at the 95 percent confidence level.
\# Difference from first subgroup listed for the characteristic significant at the 90 percent confidence level.
Difference from first subgroup listed for the characteristic significant at the 95 percent confidence level.
@ Difference from age 26 to 40 significant at the 90 percent confidence level.

Table 12
Registered as Unemployed in June 1991
Exogenous and Outcome Variable Means by County

Variable	Total Sample	Borsod	Hajdu	Somogy
Age (Years)	34.0	34.8	33.2	33.6
Gender (Percent Male)	55.1	55.3	55.7	54.0
Education (Years)	9.8	9.8	9.8	9.7
Specialization (Manual, Pct.)	36.1	34.7	33.5	42.4&
Specialization (Technical, Pct.)	10.3	10.7	11.8	7.2
White Collar Worker (Percent)	14.9	14.7	16.8	12.1
Received UI Since 6/91 (Percent)	79.0	80.5	83.7	69.1**@@&&
Never Worked Before 6/91 (Percent)	18.6	14.6	18.8	25.9*@@
Special Problems Finding Job (Pct.)	5.0	8.0*	3.4##	1.4*@@
Unskilled Worker (Percent)	31.9	33.9	30.5	29.9
Found Any Job (Percent)	35.8	30.9	43.3*##	33.8&
Found Normal Job (No Subsidy, Pct.)	31.5	27.1	37.9*##	30.2
Earnings on Normal Job (HUF)	15307	14941	16351	14013
Sample Size	604	262	203	139

* Significantly different from the total sample mean at the 90 percent confidence level.
** Significantly different from the total sample mean at the 95 percent confidence level.
# Mean for Hajdu significantly different from the mean for Borsod at the 90 percent confidence level.
Mean for Hajdu significantly different from the mean for Borsod at the 95 percent confidence level.
@ Mean for Somogy significantly different from the mean for Borsod at the 90 percent confidence level.
@@ Mean for Somogy significantly different from the mean for Borsod at the 95 percent confidence level.
& Mean for Somogy significantly different from the mean for Hajdu at the 90 percent confidence level.
&& Mean for Somogy significantly different from the mean for Hajdu at the 95 percent confidence level.

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Table 13
Participated in Retraining in 1991
Exogenous and Outcome Variable Means by County

Variable	Total Sample	Borsod	Hajdu	Somogy
Age (Years)	25.0	24.3	23.7	28.0**@@&&
Gender (Percent Male)	43.4	43.1	48.3	37.2&
Education (Years)	11.8	11.6	11.9	11.9
Specialization (Manual, Pct.)	31.0	35.2	25.3#	31.1
Specialization (Technical, Pct.)	24.3	22.4	23.3	29.1
White Collar Worker (Percent)	49.2	42.0	47.2	62.7**@@&
Received UI Since 6/91 (Percent)	71.0	67.9	73.3	73.8
Never Worked Before 6/91 (Percent)	42.1	41.7	51.4*#	30.1**@&&
Special Problems Finding Job (Pct.)	2.5	4.6	0.7##	1.0@
Unskilled Worker (Percent)	8.3	10.1	8.3	5.3
Found Any Job (Percent)	56.0	54.6	59.6	53.4
Found Normal Job (No Subsidy, Pct.)	50.6	49.5	54.8	46.6
Earnings on Normal Job (HUF)	16875	15073	17671	19190@@
Sample Size	445	196	146	103

* Significantly different from the total sample mean at the 90 percent confidence level.
** Significantly different from the total sample mean at the 95 percent confidence level
\# Mean for Hajdu significantly different from the mean for Borsod at the 90 percent confidence level.
Mean for Hajdu significantly different from the mean for Borsod at the 95 percent confidence level.
@ Mean for Somogy significantly different from the mean for Borsod at the 90 percent confidence level.
@@ Mean for Somogy significantly different from the mean for Borsod at the 95 percent confidence level.
& Mean for Somogy significantly different from the mean for Hajdu at the 90 percent confidence level.
&& Mean for Somogy significantly different from the mean for Hajdu at the 95 percent confidence level.

Table 14
Participated in Public Service Employment in 1991
Exogenous and Outcome Variable Means by County

Variable	Total Sample	Borsod	Hajdu	Somogy
Age (Years)	31.3	30.5	31.6	32.3
Gender (Percent Male)	67.4	65.1	59.1*	82.1**@@&&
Education (Years)	8.7	9.0	9.1	7.8**@@&&
Specialization (Manual, Pct.)	17.9	18.7	18.5	15.9
Specialization (Technical, Pct.)	6.5	8.6	8.9	0.0**@@&&
White Collar Worker (Percent)	7.4	6.9	12.1	2.2*&&
Received UI Since 6/91 (Percent)	38.9	36.4	35.6	47.7@&
Never Worked Before 6/91 (Percent)	18.5	24.2	14.8##	13.1@@
Special Problems Finding Job (Pct.)	7.7	13.4**	2.2**##	4.7@@
Unskilled Worker (Percent)	66.7	72.9	49.1**##	79.1**&&
Found Any Job (Percent)	39.2	33.7	50.4**##	34.6&&
Found Normal Job (No Subsidy, Pct.)	14.0	16.0	17.0	6.5**@@&&
Earnings on Normal Job (HUF)	13355	13458	14045	10643&
Sample Size	429	187	135	107

* Significantly different from the total sample mean at the 90 percent confidence level.
** Significantly different from the total sample mean at the 95 percent confidence level.
\# Mean for Hajdu significantly different from the mean for Borsod at the 90 percent confidence level.
Mean for Hajdu significantly different from the mean for Borsod at the 95 percent confidence level.
@ Mean for Somogy significantly different from the mean for Borsod at the 90 percent confidence level.
@@ Mean for Somogy significantly different from the mean for Borsod at the 95 percent confidence level.
& Mean for Somogy significantly different from the mean for Hajdu at the 90 percent confidence level.
&& Mean for Somogy significantly different from the mean for Hajdu at the 95 percent confidence level.

Table 15
Frequencies and Cumulative Reemployment Rates in the First Normal Job After Registering as Unemployed Based on the November 1992 Survey

	Registered Unemployed No ALP		Completed Retraining		PSE Participant	
Month	Frequency	Cumulative Percent	Frequency	Cumulative Percent	Frequency	Cumulative Percent
June 1991	15	9.1	1	0.9	0	0.0
July 1991	16	18.8	1	1.7	2	4.9
Aug 1991	18	29.7	1	2.6	3	12.2
Sept 1991	15	38.8	2	4.3	0	12.2
Oct 1991	5	41.8	1	5.2	5	24.4
Nov 1991	11	48.5	3	7.8	3	31.7
Dec 1991	6	52.1	1	8.6	2	36.6
Jan 1992	12	59.4	7	14.7	5	48.8
Feb 1992	6	63.0	4	18.1	3	56.1
March 1992	17	73.3	8	25.0	3	63.4
April 1992	9	78.8	4	28.4	3	70.7
May 1992	7	83.0	9	36.2	1	73.2
June 1992	2	84.2	19	52.6	3	80.5
July 1992	4	86.7	10	61.2	0	80.5
Aug 1992	6	90.3	9	69.0	2	85.4
Sept 1992	11	97.0	19	85.3	3	92.7
Oct 1992	4	99.4	14	97.4	1	95.1
Nov 1992	1	100	3	100.0	2	100.0
Total	165		116		41	

Table 16
Frequencies and Cumulative Reemployment Rates,
by Month in the Current Normal Job[1]

	Registered Unemployed No ALP		Completed Retraining		No Longer in PSE	
Month	Frequency	Cumulative Percent	Frequency	Cumulative Percent	Frequency	Cumulative Percent
Feb 1991	1	0.2				
Mar 1991	0	0.2				
Apr 1991	0	0.2				
May 1991	1	0.3			1	0.3
June 1991	3	0.8			0	0.3
July 1991	8	2.2			1	0.5
Aug 1991	8	3.6			3	1.3
Sept 1991	9	5.1			1	1.5
Oct 1991	3	5.6	1	0.2	1	1.8
Nov 1991	5	6.5	1	0.4	1	2.0
Dec 1991	3	7.0	1	0.7	2	2.5
Jan 1992	6	8.0	2	1.1	0	2.5
Feb 1992	3	8.5	4	2.0	1	2.8
Mar 1992	5	9.3	0	2.0	2	3.3
Apr 1992	6	10.4	5	3.1	1	3.6
May 1992	5	11.2	12	5.8	2	4.1
June 1992	0	11.2	7	7.4	1	4.3
July 1992	1	11.4	12	10.1	4	5.3
Aug 1992	4	12.1	9	12.1	1	5.6
Sept 1992	12	14.1	15	15.5	2	6.1
Oct 1992	8	15.4	10	17.8	2	6.6
Nov 1992	11	17.3	23	22.9	1	6.9
Dec 1992	5	18.2	10	25.2	2	7.4
Jan 1993	10	19.9	9	27.2	2	7.9
Feb 1993	4	20.5	9	29.2	1	8.1
Mar 1993	3	21.1	15	32.6	2	8.7
Apr 1993	6	22.1	9	34.6	2	9.2
May 1993	7	23.3	11	37.1	3	9.9
June 1993	8	24.6	10	39.3	2	10.4
July 1993	6	25.6	11	41.8	4	11.5
Aug 1993	7	26.8	7	43.4	2	12.0
Sept 1993	12	28.9	10	45.6	7	13.7
Oct 1993	7	30.1	13	48.5	3	14.5
Nov 1993	8	31.4	9	50.6	2	15.0
In a Normal Job	185		225		59	
Not in a Normal Job	404		220		334	
TOTAL	589		445		393	

[1]Based on response to the question, "At present you are in a normal job, when did you start this job?" in the November 1993 ILO survey.

Table 17
Experience with Normal Employment
by Persons Not In A Normal Job
in November 1993

	Registered Unemployed	Retraining Participant	PSE Worker
Not in a Normal Job in November 1993	404	220	334
Percent with a Normal Job since November 1992	9.7%	15.9%	14.1%
Distribution of Monthsin a Normal Job Since November 1992			
1 month	2	4	5
2 months	6	2	7
3 months	5	5	6
4 months	6	7	6
5 months	5	2	2
6 months	3	4	2
7 months	2	1	9
8 months	3	2	2
9 months	3	1	2
10 months	3	2	3
11 months	0	1	2
12 months	1	4	1
Total with a Normal Job Since November 1992	39	35	47

Table 18
Summary of Impact Estimates for Participation in Retraining

Estimation Methodology	In a Normal Job (Percent)	Monthly Earnings (Hungarian Forints)
Unadjusted	19.2**	1,487
Matched Pairs	1.2	2,052
Regression Adjusted	6.3*	493
Selection Bias Corrected	32.0**	

* Impact estimate significant at the 90 percent confidence level in a two-tail test.
** Impact estimate significant at the 95 percent confidence level in a two-tail test.

Table 19

Summary of Impact Estimates for Participation in Public Service Employment (PSE)

Estimation Methodology	In a Normal Job (Percent)	Monthly Earnings (Hungarian Forints)
Unadjusted	-16.4*8	-2,188*
Matched Pairs	-15.0**	-1,049
Regression Adjusted	-16.2**	-236
Selection Bias Corrected	-13.3**	

* Impact estimate significant at the 90 percent confidence level in a two-tail test.
**Impact estimate significant at the 95 percent confidence level in a two-tail test.